

# Regional Rail: The Philadelphia Story

RONALD DEGRAW

The 323-mi regional rail network operated by the Southeastern Pennsylvania Transportation Authority plays a vital role in linking Philadelphia and its four suburban counties. With the opening of the Center City Commuter Connection in 1984, the stub-end rail lines operated by the former Pennsylvania Railroad and Reading Company were all through-routed into a truly regional service network. This is the largest unified regional rail network in North America. A line to Philadelphia International Airport opened in 1985, providing direct service to the new Pennsylvania Convention Center in downtown Philadelphia. The formation of the regional rail system is explained, along with the serious problems that contributed to ridership declines. Future route extensions are discussed, as is the transit authority's search for more practical and economical methods of operating rail service.

The regional rail network operated by the Southeastern Pennsylvania Transportation Authority (SEPTA) is one of the largest and most comprehensive in North America, operating 323 mi of lines and serving 160 stations in Philadelphia and the four adjacent suburban counties (Table 1). It is possible to board a train at any station in the 2,000-mi<sup>2</sup> area and ride to just about any other place. No longer is the rail network strictly a radial one, with all trains terminating in Center City Philadelphia.

The Philadelphia area's commuter rail lines were originally two distinctly separate systems built and owned by the Pennsylvania Railroad and the Reading Company. The earliest of the lines goes back to the 1830s, when the Philadelphia and Columbia Railroad was constructed westward from Philadelphia along the route of the old "Main Line of Public Works." All of the commuter lines were in operation by the end of the 19th century, when living in the suburbs and commuting to work by train was beginning to become popular. Both the Pennsylvania and the Reading established extensive commuter train service on most of the rail lines radiating from downtown Philadelphia. Both railroads built huge, impressive stub-end terminals within the shadow of City Hall. The Pennsylvania's Broad Street Station, originally built in 1881 and later expanded, was home to the railroad's general offices. In addition to commuter trains, the station played host to many New York and other long-distance trains.

Reading Terminal, at 12th and Market Streets, opened in 1893 and handled all of the Reading's trains, commuter as well as long distance. Both railroads electrified nearly all of their commuter service between 1915 and 1930, using multiple-unit equipment that survived into the SEPTA years. Because of the electrification, and the relatively high level of use, virtually all of the Philadelphia area's commuter lines remained in service, with few abandonments.

## MID-CENTURY DECLINE AND RESCUE

Abandonments were minor, but much of the physical plant was permitted to decay. Ridership was dropping fast after the boom

years of World War II, and expenses were rising even faster. This disastrous combination turned the commuter lines into high-volume losses by the late 1950s, and the railroads were as anxious to get out of the commuter business as they were to scrap long-distance passenger trains. Routine maintenance of stations all but ceased. Even such things as broken steps and burned-out light bulbs were often ignored. Lightly used trains were eliminated, and new commuter cars were not even seriously considered. Some of the equipment used on the Pennsylvania routes dated back to the original 1915 electrification of the Paoli line and was long past its time for retirement.

Decreased service and frequent delays and breakdowns resulted in more and more riders seeking alternative means of getting to work, usually turning to their automobiles. The Schuylkill Expressway from the west to Center City and the Route 309 Expressway from the north were both opened in the late 1950s, making driving to work more convenient and luring many riders from the trains.

It was under Philadelphia Mayor Richardson Dilworth in 1958 that the city began funneling subsidies to the two railroads to purchase improved service and some new cars. The subsidization program was successful in attracting additional riders, and so the subsidies grew; during the 1960s the four suburban counties began participating. Fares were reduced and kept low, service was reasonably good, and more new cars were bought.

## SEPTA TAKES OVER

The initial modest subsidies eventually grew into millions of dollars a year, and when SEPTA was formed in 1964 it soon became the agency to oversee the commuter service and to administer the subsidy program. For the first 19 years of its life, SEPTA did not actually operate the railroad service. The Pennsylvania and the Reading continued to operate it with their employees, although SEPTA acquired ownership of most of the lines in 1976 and 1979 (Figure 1). SEPTA determined how much service would be operated and negotiated purchase-of-service contracts with the Reading and the Pennsylvania and later with Penn Central and then Conrail. Finally on January 1, 1983, by Congressional mandate, SEPTA began using its own employees to run the service.

Several long-distance lines, all operated with rail diesel cars because they were not electrified, were abandoned in 1981. Even though they operated for long distances outside of SEPTA's five-county service territory, they had never been subsidized by the other counties or states through which they ran. The excuse was also used that the RDC equipment was old and in need of major renovation. These lines ran to Bethlehem, Reading, and Pottsville, Pennsylvania; and Newark, New Jersey. Service on the nonelectrified Newtown line was suspended in 1983. In the following years service on a portion of an electrified line from Elwyn to West Chester was also suspended because the track needed major

TABLE 1 SEPTA Regional Rail System (February 1994)

ROUTE	DESTINATION	ONE WAY ROUTE MILES	AVERAGE WEEKDAY RIDERSHIP
R1	Phila. International Airport-Market East	9.7	2,200
	Warminster-Market East	20.1	*
R2	Wilmington-Market East	27.3	6,200
	Warminster-Market East	20.1	5,550
R3	Elwyn-Market East	15.5	8,300
	West Trenton-Market East	32.6	6,700
R5	Parkesburg-Market East	68.6	20,200
	Doylestown-Market East	34.2	9,600
R6	Cynwyd-Market East	6.6	250
	Norristown-Market East	18.1	4,300
R7	Trenton-Market East	35.0	7,750
	Chestnut Hill East-Market East	10.8	4,450
R8	Chestnut Hill West-Market East	13.3	5,850
	Fox Chase-Market East	11.1	3,350
Total		323.0	84,700

\* Shown under R2

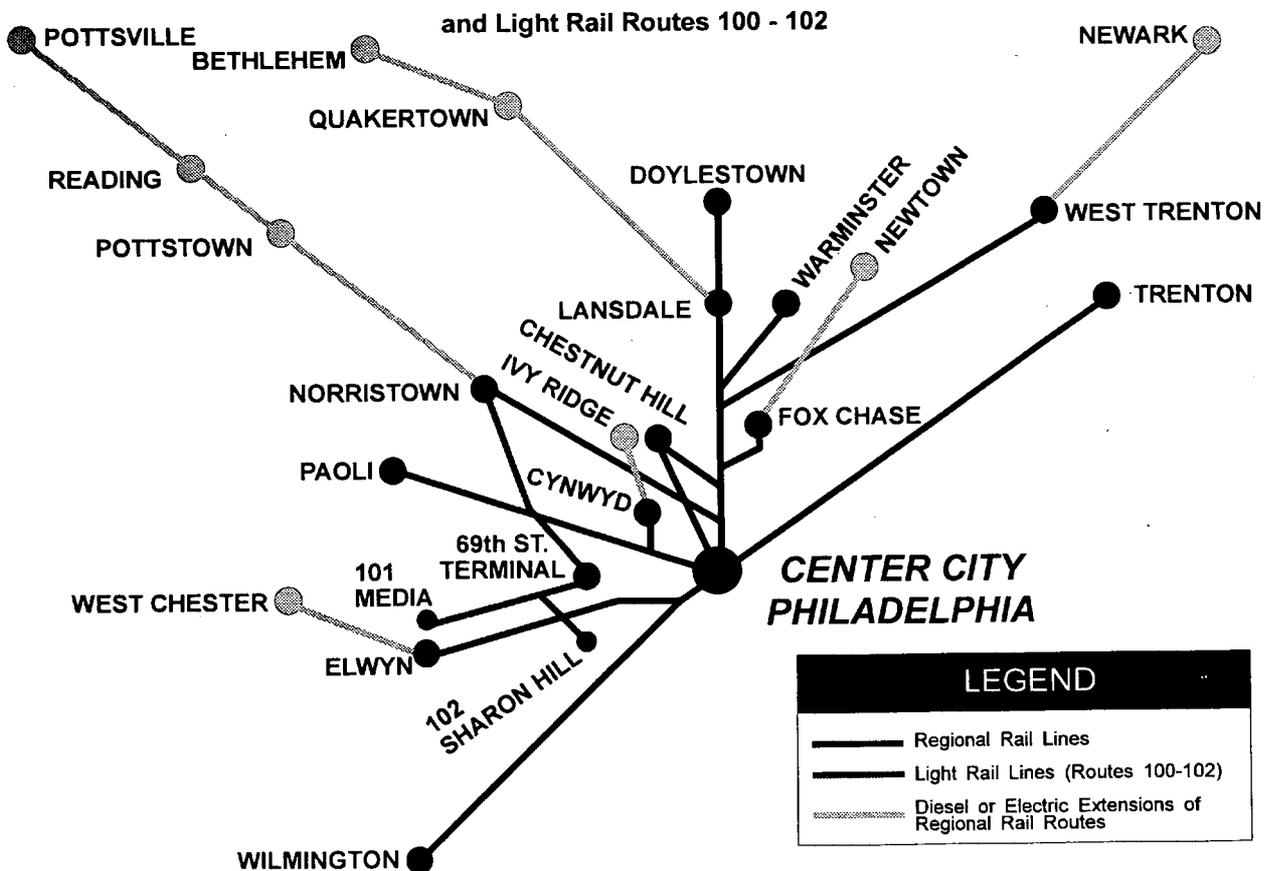


FIGURE 1 1980 regional rail system and light rail routes 100-102.

work and ridership was low. The West Chester and Newtown suspensions are technically temporary, although there is still no service there. SEPTA is currently attempting to accept a bid from a private operator to run the Newtown line.

**CENTER CITY CONNECTION**

The idea of connecting the two suburban commuter networks in the downtown area had been discussed for decades in Philadelphia. With private ownership of both lines, and a paucity of federal transit funds, the idea went nowhere. But the creation of SEPTA 30 years ago provided new impetus for the idea, with strong financial support from the city of Philadelphia.

The old Reading system deposited passengers two blocks east of City Hall, near the main department store district but several blocks from the principal office district. Furthermore, the office district was beginning to grow toward the west, even farther from the Reading Terminal. The Pennsylvania Railroad's underground Suburban Station, which replaced Broad Street Station as a terminus for commuter service in 1930, was much more centrally located to serve the prime business area but a good walk from most of the department stores. The Pennsylvania had the added advantage of a second stop for commuter trains at 30th Street Station, the main railroad station for long-distance trains on the west side of the Schuylkill River, near two of the city's largest universities.

To build an underground tunnel connecting the two railroad systems and inaugurate through service seemed to make a lot of sense. Serious planning for the tunnel got under way in the early 1960s. The project was dubbed the Center City Commuter Con-

nection. Original discussions called for a six-track tunnel, but this was later scaled back to four tracks on a route parallel to and about a half block north of Market Street. Four of the seven stub-end tracks at Suburban Station were extended eastward in a tunnel from 16th Street to about 9th Street, where they turned sharply north and ramped up from the new tunnel to link up with the old Reading elevated right of way. A new station, called Market East Station, was constructed between 10th and 12th Streets in the tunnel to replace the old Reading Terminal. The new station was a part of the huge Gallery Shopping Complex built on the north side of Market Street from east of 9th Street to 11th Street.

**COMMERCIAL AND OPERATING IMPACTS**

All of the old and somewhat seedy buildings along Market Street were removed to make way for the Gallery complex, with the spacious new railroad station as its cornerstone. It is likely that the shopping complex could not have been funded without the proximity of the rail station, and it is probable that the rail station would never have been built without the commercial development. The entire project was basically an urban renewal program, and it went a long way toward improving the east side of Market Street, probably Philadelphia's most important commercial district.

The Center City Commuter Connection was one of the largest civil works projects in the nation, costing \$330 million. When it opened on November 10, 1984, it changed forever the way the regional rail system was operated.

Now the SEPTA commuter rail network truly became a regional rail system (Figure 2). No longer was it simply a traditional group

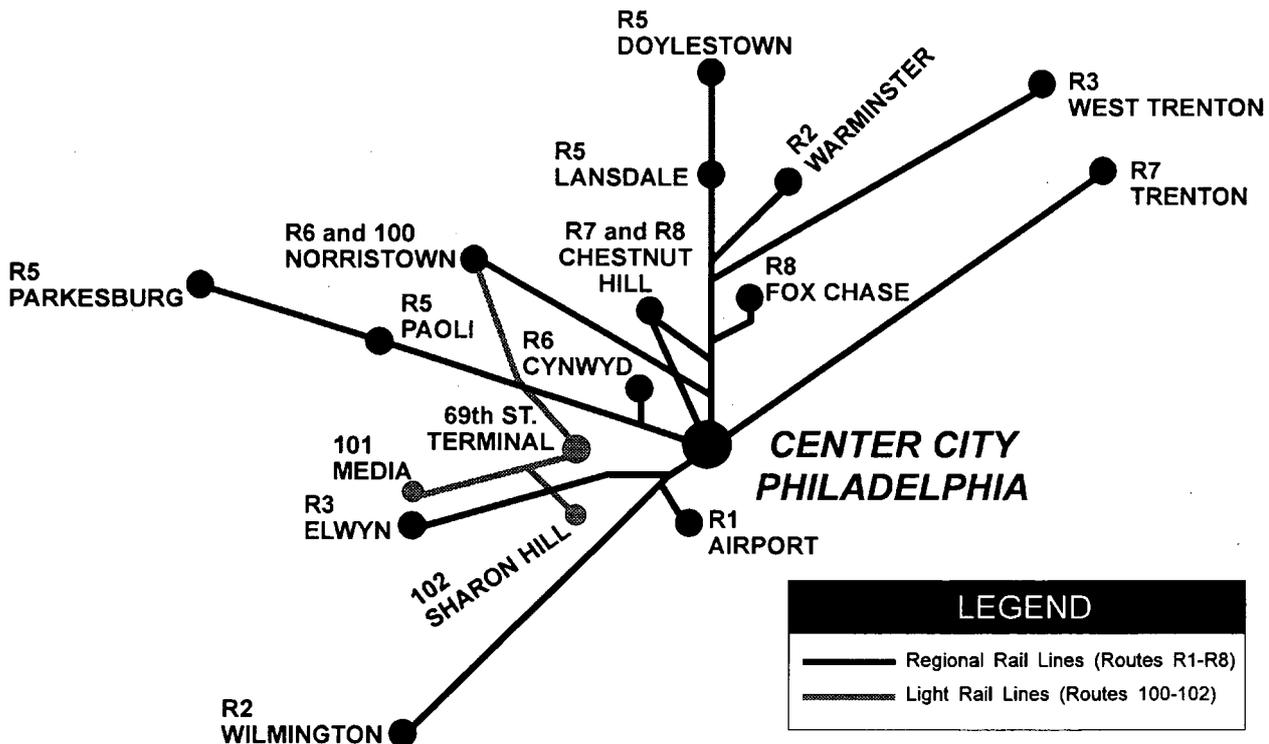


FIGURE 2 Current regional rail system and light rail routes 100-102.

of radial rail lines leading from the suburbs into Center City. Now all of the lines were through routed, each former Reading line linked with a former Pennsylvania line to form a single suburb-to-suburb via Center City routing. It became—and remains—the largest through-routed, truly regional rail network in North America.

This created some immediate operating changes, if not problems. Previously all trains dead-ended at a Center City station. If a train arrived late at Center City, its next outbound trip could often leave on time simply by reducing the train's layover time at the terminal. If a train was going to arrive at the terminal very late, its next trip could be filled by a relay train and crew on standby at the terminal. Train crews reported on and off at the terminal, making very simple such things as crew assignments and cash remittance. Now all of a sudden, a late-arriving train meant a late-leaving train, and some crews never spent any time at downtown stations. If trains on one branch fell late, it virtually guaranteed that trains on another branch would be late. On-time performance was suddenly much more important than previously, because a late train could now mean hundreds of people standing around on downtown station platforms. Great importance is therefore placed on running trains on time, and detailed daily records of each train are kept. The average on-time performance—which means less than 6 min late—is now about 93 percent.

SEPTA does not control the entire rail network, and so some decisions by other railroads unfortunately affect the on-time performance of SEPTA trains. Two relatively small portions of the system are owned by Conrail and are not generally much trouble. Three of the most important segments, however, are owned and dispatched by Amtrak, and SEPTA trains are often delayed while Amtrak trains are given priority or are delayed by slow orders on Amtrak trackage. These lines—all former Pennsylvania Railroad routes—run from Philadelphia to Wilmington, Trenton, and Paoli-Parkesburg. The Paoli line is SEPTA's most important route, with about 20,000 passengers daily.

### IMPACTS ON PASSENGERS

When the Center City tunnel opened, passengers also immediately experienced a difference. At Suburban Station, passengers previously could board trains about 10 min before departure time. At Reading Terminal, the gates opened 5 min before a train left. Now at Market East Station and at Suburban Station, passengers stand on the platforms and wait for their trains to arrive the same as subway passengers do.

But the benefits of the through-routed system to passengers far outweighed the problems. Reading-side passengers could now travel to the western side of Center City at Suburban Station or make connections with an Amtrak train at 30th Street Station. The transfer between Reading Terminal and 30th Street Station was previously very awkward. And of course riders were now able to travel from one suburb to another, either without getting off in Center City or with an extremely easy transfer from one line to another at a downtown station. This type of traffic is growing, although very slowly.

It requires more cars to operate the through-routed service than it did to run the separate lines. A five-car train from Paoli to Philadelphia in the morning rush hour, for example, may next go north to Doylestown, even though the reverse-direction Doylestown service only requires a two-car train. No method of easily

cutting and adding cars en route exists, and this is a major shortcoming of the Center City Commuter Connection.

### TRAINS TO AIRPORT

A new rail line linking Philadelphia International Airport with Center City was opened in 1985 serving 30th Street Station, Suburban Station, and Market East Station. Two years ago the airport trains were extended northward to serve Jenkintown and the Warminster branch, opening up many more one-seat trip possibilities. The airport line operates every 30 min from 6:00 a.m. until midnight, but ridership has never exceeded 2,200 a day. Ridership has suffered from headways that may not be frequent enough and from the failure to build stations that were planned for Southwest Philadelphia and University City. The University City Station is finally scheduled to open in 1995. Crewmen on the airport line are specially trained to be able to answer questions about Center City hotels and tourist attractions, and the service has a high rate of reliability.

The opening of the new Pennsylvania Convention Center last year immediately adjacent to Market East Station is expected to result in additional riding on the regional rail lines, particularly on the airport line.

### REDUCED RIDERSHIP

Ridership on the regional rail system is 84,000 a day, about the same as when SEPTA gained ownership of the lines 11 years ago but down 11,000 from the high of 4 years ago. Three major events helped to depress ridership. There was a 108-day strike of the railroad unions in 1983 as SEPTA sought—with ultimate success—to modify some of the existing work rules. The modifications helped to make the railroad operation more economically practical, but the long strike caused some people to permanently find an alternative means of transportation.

The economy took a major downturn a few years ago and is perhaps just now beginning to recover. In these years, however, many companies reduced the size of their work forces, which caused further deterioration in rail patronage.

And finally there was RailWorks. About a week after the long-awaited Center City Commuter Connection opened in 1984, it was discovered that the four-track Columbia Avenue bridge on the old Reading line just north of Center City was in imminent danger of collapsing. After years of planning and construction, after months of promoting the new tunnel connection, suddenly the entire Reading network was cut off from its connection to Center City. Reading-side passengers were temporarily transferred in North Philadelphia to Broad Street Subway trains, and SEPTA officials frantically patched together a plan to turn Market East Station into a temporary stub-end terminal for Pennsylvania-side trains. The bridge was rebuilt within 17 days, but it made a big impression on everyone involved. The deferred maintenance by the two private railroad companies in recent decades had not merely included stations and track. It had also included major safety items such as bridges. SEPTA quickly found that many of the two dozen bridges on the Reading between Center City and Wayne Junction were in poor shape and would soon need to be rebuilt or closed. Fearing another major service disruption, SEPTA put together a mammoth \$264 million project to rebuild all of the bridges on this 2-mi

segment. The project was called RailWorks, and it meant closing the Reading-side connection to Center City for 6 months in 1992 and another 4 months in 1993. Passengers transferred to the Broad Street subway to complete their trip downtown. The project was a great success, finishing on time and under budget, but the lengthy service disruptions drove away many passengers, some of whom never returned.

**PLANS TO REBUILD PATRONAGE**

The challenge for the future for SEPTA's regional rail lines is to recapture ridership through better service and reliability, faster trains, feeder buses, more parking spaces, reasonably priced fares, and expansion of service into new areas.

Many of these goals have already been tackled. Some lines now have more express trains and later night service than they had before SEPTA acquired the rail lines a decade ago. There have been some minor improvements in speed, but much more work needs to be done in this area to make the trains competitive with automobiles on the expressways.

About 5 years ago SEPTA began creating special bus routes dedicated to meeting trains and shuttling passengers to industrial parks and shopping centers. These routes have met with moderate success. Thousands of parking spaces have been added, with many more proposed for the near future. Most passengers now use weekly or monthly passes, which provide substantial discounts over regular cash fares.

**PROSPECTS FOR EXPANDED SERVICES**

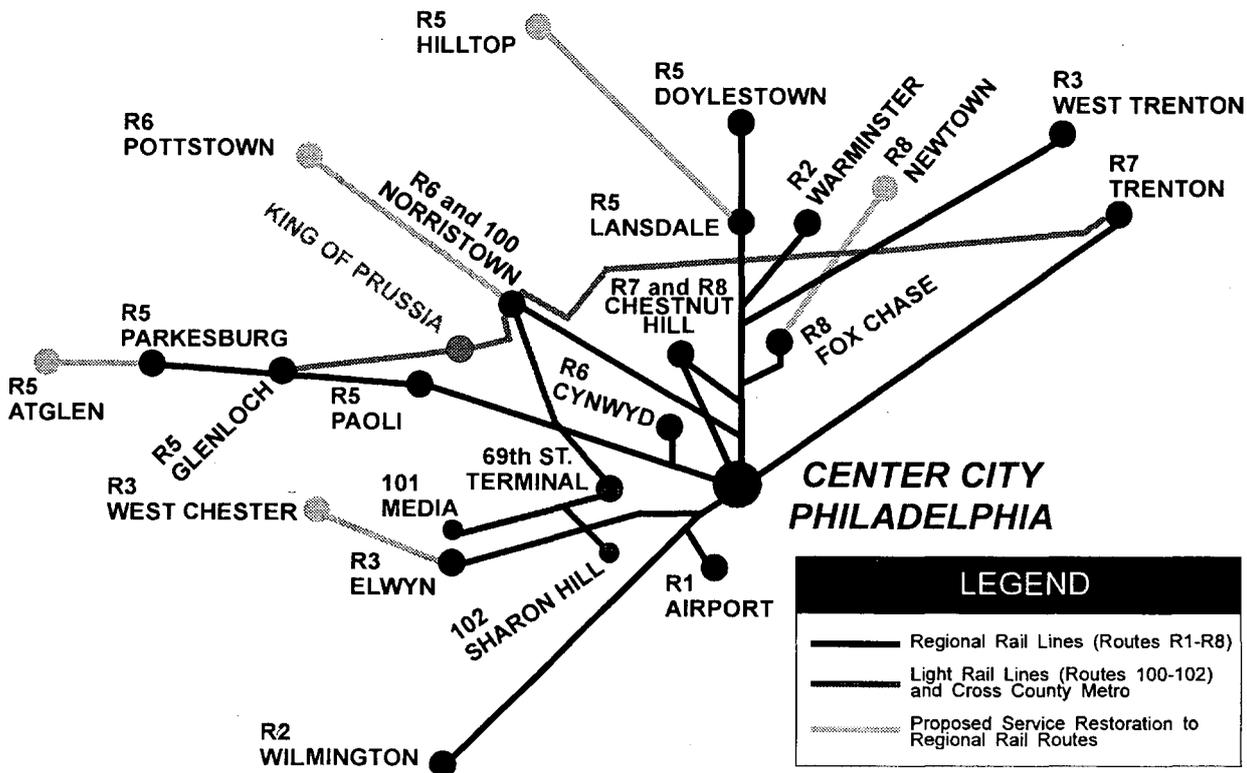
Expansion of the system in several directions is being considered (Figure 3). The first restoration of previously discontinued rail service may be the branch from Fox Chase to Newtown, which is not electrified. Service ceased a decade ago, and may be restored in 1995 by a private contractor operating European diesel cars that would connect with SEPTA electric trains at Fox Chase.

The same contractor is examining the possibility of operating diesel cars over the nonelectric portion of the old Bethlehem branch from Hellertown to Lansdale, where connections would be made with existing SEPTA train service. Both the Newtown line and a portion of the Bethlehem line are in SEPTA's capital program for restoration of rail service at some future time, but service may be resumed sooner if the private operator is successful.

SEPTA is examining the practicability of restoring rail service between Elwyn and West Chester, an electrified branch that saw its last trains in 1985. The option of operating this as a light rail line with frequent service, including 20-min peak trains, is being considered. The reduced costs of operating the branch as light rail instead of commuter rail could result in the ability to offer a much greater frequency of service.

Also under discussion is the possibility of restoring service from Norristown to Pottstown and perhaps Reading. This is also nonelectrified territory, which operates a high density of Conrail freight trains. It was the old main line of the Reading Company, and passenger service was eliminated in 1981.

It has often been suggested that SEPTA take over the 104-mi Philadelphia-to-Harrisburg line from Amtrak, which has been re-



**FIGURE 3** Proposed Cross County Metro and proposed service restorations, with current regional rail system and light rail routes 100-102.

ducing service in recent years. SEPTA trains already run 44 mi out the Harrisburg line to Parkesburg.

The most unusual proposal for new service may also be the most promising. SEPTA is seriously considering instituting passenger service on the old Pennsylvania Railroad's Trenton Cut-Off line, which runs from Morrisville west to Downingtown, where it connects with SEPTA's Route R5 Parkesburg line. Dubbed the Cross County Metro, this line crosses several SEPTA bus and rail routes and would offer an interesting opportunity to provide circumferential rather than strictly radial journeys.

The biggest problem facing all transit authorities today is the rapidly changing habits of workers. Not too long ago, nearly all jobs were in the city, most of them in the downtown area, so radial transit routes—both bus and rail—made a lot of sense and served the needs of their customers very well. Today those job patterns have changed dramatically, with far more people living in one suburb and commuting—usually by automobile—to jobs in another suburb. This radical change in commuting habits has been an incredible challenge to transit agencies, and one which has been almost impossible to cope with successfully. SEPTA and other agencies have established many cross-county bus routes, but they are usually slow and meandering and fail to attract a great many riders. The Cross County Metro, on the other hand, would be a high-speed rail line designed to provide easy access from one suburb to another, with transferring from connecting radial routes. It may even be possible to through route trains down a portion of an existing radial route and then over part of the Cross County Metro for an even faster ride.

## SEARCH FOR OPERATING ECONOMIES

The regional rail system is extremely expensive to operate, with revenue meeting only 39 percent of expenses, and SEPTA is searching for more economical methods of conducting rail passenger service. A number of options will be examined in the near future, including the possibility of high-level platforms for faster loading and unloading, prepaid fares to reduce the number of on-board staff, a greater number of express trains combined with faster running times, and the possibility of running "metro" type service or even light rail operation on some of the lines, segregating them from the rest of the system so that they can operate under standard rapid transit or light rail operating rules rather than under railroad rules.

Many of the lines have passenger volumes and characteristics that may justify conversion to light rail, which would be cheaper to operate and could therefore run more frequently and attract more passengers.

There is a tremendous investment in the Philadelphia region's rail commuter network, and because of its size and vast coverage the potential for future improvements and ridership increases seems virtually unlimited. With the huge RailWorks improvement project now completed, SEPTA will be attempting to make whatever modifications are practical to serve the commuting trends of the 21st century and to increase its ridership.

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